

SEBASTIAN COUNTY JUDGE

Purchasing Department

35 South 6th Street
Fort Smith, Arkansas 72901
(479) 784-1502 Fax (479) 784-1550

September 14, 2014

NOTICE TO: Qualified Bidders

SUBJECT: Request for Proposal, Bid Number SC – 1416

Sebastian County is interested in receiving sealed written proposals for furnishing the products/services specified in the attached Request For Proposal (RFP). Complete details regarding the products and/or services required by the County, and instructions for participating in the bid process, are included in the attached bid package.

Bids must be received by the time and date indicated in the RFP. Bids received after the time and date set for opening will not be considered.

Bidders who do not wish to submit bids must submit a "No Bid" to continue to be eligible for retention on the Bid List. The Bid List is periodically reviewed and bidders who have not responded to proposal requests are deleted.

If you are interested in submitting a bid, please be sure that the requirements of the RFP are completed since failure to meet the requirements could cause your bid to be rejected.

Any questions regarding the Bid Invitation should be directed to the Purchasing Department, (479) 784-1502.

Paul Schlaefli
Purchasing/Facilities Administrator
Sebastian County

Attach: RFP

REQUEST FOR PROPOSAL

Sebastian County, Arkansas

COVER SHEET

SECTION I

BID NUMBER: SC-1416

TITLE: Ben Geren Soccer Field Irrigation

PRE-BID MEETING: DATE: September 23, 2014
TIME: 9:00 a.m.
PLACE: Ben Geren Soccer Complex
7200 Zero Street
Fort Smith, AR 72903

OPENING: DATE: September 30, 2014
TIME: 2:00 p.m.
PLACE: Sebastian County Courthouse
35 South 6th Street, Room 106
Fort Smith, Arkansas

MAIL SEALED PROPOSALS TO: Sebastian County Purchasing Dept.
35 South 6th Street, Room 106
Fort Smith, Arkansas 72901

ON OUTSIDE OF PROPOSAL SHOW: (1) Return address
(2) Bid opening date
(3) Bid number & title

BIDDER MUST COMPLETE THE FOLLOWING INFORMATION:

NAME OF BIDDER: _____

ADDRESS: _____

CITY/STATE/ZIP CODE: _____

TELEPHONE NUMBER: _____ FAX Number: _____ Email: _____

INSTRUCTIONS:

1. Unit prices and extensions are required on proposal form.
2. **Return three copies of Section I (Cover Sheet) and Section II Proposal), and any other documents required by the specifications.**
3. Proposals must be signed to be accepted.
4. Any trade discounts should be deducted and net prices shown.
5. Bidder must guarantee product(s) offered will meet or exceed specifications contained in this Request for Proposals.
6. Bidding procedures will be in compliance with Arkansas Laws.
7. **QUOTE:** F.O.B. destination.
8. **TERMS:** Net 30 days.

PROPOSAL FORM

BID NO. SC-1416

SECTION II

We, the undersigned, agree to furnish the products and/or services indicated below in accordance with the specifications and conditions contained herein, at the bid price shown.

It is expressly agreed and understood by and between the parties hereto, and is made a condition precedent to the entering into of any purchase agreement resulting from this invitation to bid, that the County Judge, Sebastian County, shall determine any and all questions or disputes which may arise concerning conformity to the specifications and conditions, and proposals; and the quantity, suitability, and acceptability of all items to be furnished hereunder; and his decision as to such matters shall be final, binding, and conclusive upon the parties hereto.

That this Request For Proposal and proposals submitted hereunder shall be governed by the laws of the State of Arkansas.

We, the undersigned, affirm that this proposal is made on behalf of the undersigned, and is made without collusion on the part of any person, firm or corporation; and that the conditions and other provisions have been carefully examined and are agreed to.

Ben Geren Soccer Field Irrigation (*Field 11, 5 and 12 to be done in phases*)

Description:	Total Price:
Provide pipe and heads per attached drawing for (3) 240'x360' fields. (<i>To be done in phases</i>)	\$ _____
(2) Sprinkler Control Units (<i>1 to control Field 11 and (1) to replace Field 6 & 7 and capable of adding Fields 5 & 12</i>)	\$ _____
Installation of Product and connection to backflow prevention provided by owner	\$ _____
Tax	\$ _____
Total Bid	\$ _____
Written Amount \$ _____	

Amounts shall be in both written form and figures. In case of a discrepancy between the written amount and the figures, the written amount will govern.

Contractor's License No. _____

Exceptions to specifications: NO _____ YES _____ (Attach itemized list)

From: _____ Signature: _____
(Printed name & signature) (Vendor)

Date: _____ Title: _____

GENERAL CONDITIONS

Bid No. SC-1416

SECTION III

1. Bids must be received no later than the date and time set for bid opening. **Bids must be sealed.** Bids may be withdrawn, modified or corrected by the bidder after it has been submitted provided a written request to do so is filed with the County Judge prior to the time set for opening the bid. Telegrams or letters received prior to the time set for opening the bids will be accepted and attached to the unopened bid, and the bid will be considered withdrawn, modified, corrected, or otherwise changed accordingly. **NO BID MAY BE WITHDRAWN, MODIFIED, CORRECTED, OR OTHERWISE CHANGED AFTER THE TIME SET FOR OPENING THE BIDS.**
2. Specifications are designed to describe the type and quality of the product/services desired by the County. They are not intended to restrict bidding on any like product/service of equal or higher quality. Any exceptions to the specifications must be noted on a separate sheet by reference to the item number in the specifications where the exception is taken. If no exceptions are submitted with the Proposal, and accepted by the County, bidders will be expected to comply with the specifications. Products and/or services will be inspected for compliance prior to acceptance.
3. Prices quoted will be considered net prices unless otherwise stated by the bidder in the proposal. Bid prices must remain firm for 60 days unless otherwise stated in the specifications.
4. It shall be understood and agreed that any material or product purchased under this bid shall be new and in first class condition unless otherwise stated in or required by the bid invitation.
5. **Bids must be signed to be accepted.** Signature must be that of the individual authorized to obligate the bidder who is submitting the bid or proposal.
6. **State and Local Sales Taxes shall be stated as a separate item and shall not be included in the bid price of the product/services being proposed. If no taxes are so stated, the County will assume that any taxes due have been included in the price quoted and no additional taxes will subsequently be added to the bid price. The County is Sales Tax Exempt on motor vehicle purchases.**
7. **BIDS WILL BE EVALUATED BASED UPON COMPLIANCE WITH THE SPECIFICATIONS, BID PRICE, APPLICABILITY AND SUITABILITY OF THE PRODUCT/SERVICES BEING OFFERED, PRODUCT AND VENDOR RELIABILITY, WARRANTY, DELIVERY TIME, AND SUCH OTHER FACTORS DEEMED APPROPRIATE TO ASSURE THE COUNTY RECEIVES A QUALITY PRODUCT MOST ADVANTAGEOUS TO THE COUNTY.**
8. Assignment of any part or all of payments accruing under contracts or purchase agreements resulting from this Invitation to Bid will not be authorized. Payment shall only be made to the Contractor or vendor with whom the order is placed.
9. The County reserves the right to accept part or all of any specific bid or bids, and to accept any bid or bids with or without trade-in whichever is most advantageous to the County.
10. The Sebastian County Judge reserves the right to reject any or all bids/proposals, to accept any deemed most advantageous to the County, and to waive any formalities.
11. Attention of bidders is particularly called to the requirements as to conditions of employment to be observed. Bidders are advised that Arkansas State Department of Labor Prevailing Wage Rates may apply to this project should the base bid for all labor and materials reach the \$75,000 amount specified by State Law.

SPECIFICATIONS

Bid No. SC-1416

SECTION IV

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. General Provisions of the contract and other applicable parts of the construction documents apply to this Section
- B. All references in this Section to “Contractor” and/or “Irrigation Contractor” shall mean “Landscape Contractor or Irrigation Contractor”.

1.2 SUMMARY:

- A. Furnish all labor, materials, equipment and instructions necessary for the complete installation of the landscape irrigation system as drawn and specified. The work includes, but not limited to:
 - 1. Trenching, backfilling, and compaction for irrigation lines.
 - 2. Backfill material may be existing materials but additional material may be required to limit depressions on the surface. Any additional material shall be provided by the contractor and be free from rocks or other debris that would cause damage to pipe & wires.
 - 3. Provisions and installation for a turnkey automatic sprinkler system. Provide controller, piping, heads, valves, quick couplers, valve access boxes, low voltage wiring, applicable connection fees and all other items required for a complete system. The system shall be installed in strict accordance with all applicable codes, ordinances and regulations
 - 4. Test all systems, make operative and adjust.
 - 5. Submit Record Drawing and Maintenance Manual.
 - 6. Maintain and operate until 30 days after satisfactory completion of the project.
 - 7. One-year Guarantee Period.
- B. Related work by others
 - 1. Water Meter as provided by Sebastian County
 - 2. Electrical work and Conduit as provided by Electrical Contractor for the automatic controller and backflow preventer enclosure
- C. Provide the number of heads required to assure 100% coverage.
- D. Winterization shall be done by installing automatic drain valves in the low points of the lateral lines & manual drain valves in the low points of the mainline.
- E. Coordinate exact location of water meter, backflow preventer, controller and sensors with Sebastian County.
- F. The Contractor’s attention is directed to the fact that there are other utilities located within the limits of the work. Before commencing any work required under the Contract, he shall determine the location of all utilities, subsurface drainage, structures and underground construction so that proper precaution may be taken not to disturb or damage during all operations. The Contractor shall be held responsible for making, at his own expense, all repairs to damaged utilities which could have been located or other construction resulting from the work covered by this Contract.
- G. The Contractor shall coordinate the installation of the sprinkler system with all other trades.
- H. Permits and Fees:
 - 1. Obtain all permits and pay required fees, to any agency having jurisdiction over the work.
 - 2. Arrange inspections required by local ordinances during the course of construction
 - 3. Upon completion of the work, furnish satisfactory evidence to show that all work has been installed in accordance with the ordinance and code requirements.
- I. Testing:
 - 1. Perform all testing required by specifications under supervision of Sebastian County.
 - 2. Give 3 days’ notice that such a test is to be conducted.

1.3 QUALITY CONTROL:

- A. To the greatest extent possible, provide system components produced by a single manufacturer. Provide secondary materials as recommended by the primary system manufacturer.
- B. The sprinkler system shall be installed, to the extent possible, to promote water soil and energy conservation.
- C. Provide installation by a licensed mechanical contractor, landscape contractor or irrigation contractor, skilled in work required and completely familiar with manufacturer's recommended method of installation requirements. Contractor must have a minimum of five consecutive years' experience in this area of work and having completely installed other jobs of similar size and scope. Evidence of the Contractor's qualifications shall be presented before the awarded of contract.
- D. Approval and selection of Material and Work: The selection of all materials and the execution of all operations required under the Contract Document shall be subject to the approval of Sebastian County who shall have the right to reject any and all materials and any and all work which, in their opinion, does not meet the requirements of the Contract Documents at any stage of the operation. All rejected material shall be removed from the site by the Contractor.
- E. The Contractor shall maintain a competent, skilled and satisfactory work force during and through the completion of the construction period. In no case, shall unskilled labor be allowed to operate equipment, assemble, glue, install, wire, test or adjust components of the system. If in the opinion of the Sebastian County, the labor furnished by the Contractor is incompetent or inexperienced in the practice assigned, the Contractor shall remove such persons or reassign them to a practice acceptable to Sebastian County.
- F. Conform to all codes, statutes, laws and regulations governed by the following agencies for the protection of public safety:
 - ASTM American Society for Testing Materials
 - AWWA American Water Works Association
 - NEC National Electric Code
 - NSF National Sanitary Foundation
 - OSHA Occupational Safety and Health Act
 - UPC Uniform Plumbing Code
- G. The Contractor shall make application, acquire, comply and pay for all licenses and/or permits required by Local, State, or National Governing Agencies as may be required to perform and complete the work as described in the Contract Documents.
- H. Upon completion of the work, furnish satisfactory evidence to show that all work has been installed in accordance with the ordinance and code requirements.

1.4 SUBMITTALS:

- A. General: Make all submittals far enough in advance of scheduled dates of installation to provide all required time for reviews, for possible revisions, and resubmittals, and for placing orders and securing delivery.
- B. Full and complete coverage is required. Contractor shall make any necessary minor adjustments to the layout as required to achieve full coverage of irrigated area at no additional cost to the Sebastian County. It shall be the contractor's responsibility to establish the location of all sprinkler heads in order to ensure proper coverage of all areas.
- C. Product Manual: Submit technical specification sheets and or performance data for all proposed system components. Submit address and telephone number of the subcontractor installing the system and the local representative for the equipment.
- D. Record Drawings:
 - 1. Prepare and Submit reproducible complete as-built Record Drawings showing the entire system including deviations from the Contract Documents made during construction affecting all piping, controller location, valve locations, and all sprinkler head locations. Record Drawings shall also

indicate and show approved substitutions of size, material, and manufacturer's name and catalog number and name.

2. Deliver Record Drawings with request for inspection and acceptance.

E. Maintenance Manual:

1. Prepare and submit irrigation system maintenance and operation instructions including the measures that should be taken to provide winterization for the system. Provide all relevant manufacturers' literature and a complete parts list covering all operating equipment.
2. Submit in a hard-cover three ring binder.
3. Include full name, address, and telephone number of installer.
4. Deliver Maintenance Manual with request for inspection and acceptance.

1.5 SCHEDULE:

- A. The Contractor shall install the irrigation system in accordance with the schedule requirements provided by Sebastian County.
- B. This project will be done in phases. We will start with Field 11, Field 5 and Field 12.
- C. Coordinate and cooperate with Sebastian County and other contractors and trades to enable the work to proceed as rapidly and efficiently as possible, and to be completed on schedule.
- D. Anticipate last minute delays which may necessitate overtime work to complete the work schedule.

1.6 PROJECT CONDITIONS:

- A. The Contractor shall warrant that he has fully informed himself of the site condition under which the work will be performed and is thoroughly familiar with the Contract Documents and all applicable codes and standards. Failure to have done so will not relieve the Contractor of his obligation to furnish all supervision, labor, tools, materials, equipment and supplies necessary to perform the provisions of the work detailed in the Contract Documents.
- B. Make necessary adjustments in the layouts as may be required to connect to existing stub-outs, should such not be located exactly as shown, and as may be required to work around existing work at no increase in cost to the Sebastian County.
- C. The Contractor's attention is directed to the fact that there are other utilities located within the limits of the work. Before commencing any work required under the Contract, he shall determine the location of all utilities, subsurface drainage, structures and underground construction so that proper precaution may be taken not to disturb or damage during all operations. The Contractor shall be held responsible for making, at his own expense, all repairs to damaged utilities which could have been located or other construction resulting from the work covered by this Contract.
- D. Should utilities not be shown on plans be found during excavations, promptly notify Sebastian County for instructions as to further action.
- E. The Contractor shall assume full responsibility for all intentional and unintentional disturbance or damage to the site by all parties, employee's contract workers, or sub-contractors involved under the authority or interest of the Contractor. Sebastian County shall be the sole and final authority of the acceptability of all restoration of aesthetically sensitive areas. The public or private authority or agency responsible for ecological or environmentally sensitive areas shall be the final authority as to the acceptability of restoration work within such areas. All fines, penalties and restoration expense of any such disturbance shall be the sole responsibility of the Contractor.

1.7 PROTECTION OF WORK AND MATERIALS:

- A. Use all means necessary to protect the work before, during and after installation and to protect the material and installed work of all other trades.
- B. In the event of damage, immediately make all repairs and replacements necessary to the approval of Sebastian County at no additional cost to Sebastian County.

- C. Store materials delivered to site, prior to actual use, in a secure place not to interfere with other trades or construction and protect from vandalism, damage by weather or other elements.

1.8 ACCIDENT REACTION:

- A. The Contractor shall comply with the safety standards provisions of applicable laws, building and construction codes, the “Manual of Accident Prevention in Construction” published by the Associated General Contractors of America, and the requirements of OSHA.
- B. In the event of an accident causing injury or damage, the Contractor shall promptly report such to Sebastian County and required governmental agencies.

1.9 FINAL ACCEPTANCE:

- A. Final acceptance may be obtained upon the satisfactory completion of all work at the end of one (1) year Guarantee Period.

PART 2 - PRODUCTS

2.1 GENERAL:

- A. The sprinkler system design shall be based on the equipment of Rainbird Sprinkler Corporation or approved equal.
- B. Materials shall be newly manufactured and without flaws or defects, and of quality and performance as specified. Excess materials at completion are property of the Contractor, to be removed from the site.
- C. The Contractor shall be responsible for computing and supplying the required quantities necessary to make the irrigation system complete and operational in every way.

2.2 DEFINITIONS:

- A. Mainline Piping: Mainlines are the portion of piping from the Point-of-Connection to the control valves. This portion of piping is subject to surges, being a closed portion of sprinkler system. Quick coupler valves are considered a part of the mainline.
- B. Lateral Piping: Lateral piping is that portion of piping from the control valves to the sprinkler heads. This portion of piping is not subject to surges, being an “open ended “portion of the sprinkler system.

2.3 PIPE AND FITTINGS:

- A. Mainline piping above ground shall be Copper tube, Type K, Drawn tempered, copper tube fittings, soldered joints.
- B. Mainline piping below ground shall be polyvinyl chloride (PVC) pipe; meeting ASTM D1785, Sch40 for solvent weld & thread connections.
- C. Lateral piping below ground shall be polyvinyl chloride (PVC) pipe; meeting ASTM D2241, Class 200 for solvent weld connections; Sch40 for threaded connections. The minimum pipe size shall be ¾” in diameter.
- D. Polyvinyl chloride (PVC) fittings; meeting ASTM D2466, Sch40 for solvent weld connections; Sch40 for threaded connections. All fittings must be of domestic manufacture and shall be identified as to pressure rating or schedule, with a working pressure no lower than that of the pipe.
- E. Handling of Pipe and PVC Fittings: Exercise care in handling, loading, unloading , and sorting PVC pipe and fittings. Store under cover and transport in a vehicle with a bed long enough to allow no undue bending or concentrated external load at any point. Any section of pipe that has been dented or damaged will be discarded until said section of pipe is cut out and rejoined with a coupling.
- F. Visual Inspection: Provide pipe homogenous throughout, free from visible cracks, holes, blisters, wrinkles or foreign materials.
- G. PVC solvent cement shall comply with ASTM D2564, regular-bodied for pipe 2” and smaller, and medium for pipe 2 ½” and larger. Use only the solvent approved and/or recommended by the pipe manufacturer to make solvent welded joints.
- H. Use Teflon tape or an appropriate sealant for all threaded connections.

2.4 CONTROL WIRES AND CONNECTIONS:

- A. Single Conductor Wire for direct burial applications, meeting UL Standard 493, UF-16/2 for “Control” wiring and UF-16/1 for “Common” wiring. Color code the common neutral wiring from all other wires.
- B. Wire Connectors shall be either 3M DBY / DBR or Kink “One Step” Connectors or approved equal.

2.5 AUTOMATIC CONTROLLER AND SENSORS:

- A. Automatic controller shall be of a hybrid type that combines electromechanical and microprocessor-based circuitry capable of fully automatic and manual operation. The controller will be housed in a weather-proof, lockable, cabinet suitable for wall mounting.
- B. The rain sensor shall be a wall mounted device that shall interrupt the watering cycle from starting if approximately .10” of rainfall has accumulated due to precipitation at a rate equal to or greater than .25” per hour prior to or during an irrigation cycle.
- C. The freeze sensor shall be a wall mounted device that shall interrupt the watering cycle from starting if the ambient air temperature falls below 37 degrees Fahrenheit prior to or during an irrigation cycle.

2.6 IRRIGATION TIMER:

- A. Field 11: This new field irrigation timer shall be located at the west end of the field on the electrical panel supports.
- B. Fields 5 and 12: These fields will require a new irrigation timer replacing the existing unit. The new timer shall be capable of handling up to (16) stations and be mounted in the same location as the current timer. The timer will be set up to water existing Fields 6 and 7 along with new field irrigation on 5 and 12.

2.7 VALVES:

- A. The remote control valves shall be a normally closed, 24VAC solenoid actuated, global type, 200psi rated valve. They shall have manual flow control stems for accurate regulation and/or shutoff of outlet flow.
- B. The automatic drain valves shall be pressure activated type, capable of opening when system pressure drops below 2.5psi, and closing when system pressure reaches 5.5psi.

2.8 VALVE BOXES:

- A. Provide valve boxes for all remote control valves and manual gate valves. The manufacturer shall be Highline Products, Lexington, MA or approved equal.
- B. When used with a single valve use a #181104 – 10” round box with a twist lock cover. When used with multiple valves use #190106 – 20” x 14” rectangular box with snap lock cover.

2.9 SPRINKLER HEADS:

- A. All heads shall perform to manufacturer’s specifications concerning diameter of throw and flow rates at given pressures.
- B. Provide 4” pop-up rotary sprinklers in all large turf areas. The full or part circle sprinkler shall be a single steam, gear driven rotor with a rotating nozzle turret that is independent of the riser stem. The sprinkler shall have a pressure activated wiper seal that will clean debris from the pop-up stem as it retracts. Matched precipitation shall be obtained by the changing of nozzles.

PART 3 – EXECUTION

3.1 GENERAL:

- A. Verify that the work of this section is installed in strict accordance with all applicable codes, regulations the design and the approved submittals. Contractor shall install all equipment as per manufactures current specifications and recommendations.
- B. **VERIFY THAT WATER PRESSURE IS ADEQUATE FOR EFFICIENT OPERATION OF THE SPRINKLER SYSTEM AS DESIGNED AND INSTALLED.** Coordinate excavate location of Point-of-Connection with Sebastian County.
- C. Prior to all work of this section, carefully inspect the work of all other trades and verify that all such work is completed to the point where this work may properly commence. Coordinate the installation of the sprinkler system with the Sebastian County. Verify existing and proposed locations of al site utilities (i.e. gas, water, electric, telephone, fiber optics) prior to any trenching and laying pipe.
- D. Flag the location of all sprinklers in accordance with the approved design and submittals. In the event of a discrepancy, immediately notify Sebastian County. Do not proceed with installation in areas of discrepancies until all such discrepancies have been resolved.
- E. Do not install any mainline, valves, or wiring in public right-of-way. Carefully install irrigation lines in areas of any existing vegetation designated to remain, at no additional cost to Sebastian County.
- F. Verify location and configuration with Sebastian County prior to trenching and make any minor adjustments to irrigation system layout.

3.2 WATER METER & BACKFLOW PREVENTER:

- A. Immediately after contract award, conduct test at the designated Point-of-Connection and note as such on the written results provided to Sebastian County the following
 - 1. Static Water Pressure
 - 2. Dynamic Water Pressure
 - 3. Gallons per minute
- B. The Contractor shall comply with the requirements and codes of the local governing authority regarding backflow prevention.

3.3 TRENCHING & BACKFILING:

- A. Perform all excavation required for the installation of the work included under this Section, including shoring and bracing of earth banks to prevent cave in. Restore all surfaces and existing underground installations damaged or cut as a result of the excavations, to their original conditions and in manner approved by Sebastian County.
- B. Excavate trenches to a depth of 12"-18" pipe coverage, Trenches shall have sides as nearly vertical as possible Remove all lumber, rubbish and large rocks from the trenches. Provide a uniform bearing for the entire length of each pipe line to prevent uneven settlement. Wedging or blocking of pipe will not be permitted. Make the width of the trench a minimum of 1 ½ times the diameter of the piping but not less than 4 inches.
- C. Upon Completion of pipe installation and system testing, backfill the trenches with clean soil. Backfill material shall be free from rocks or any heavy unsuitable substances which could damage the pipe or create unusual settling problems. Backfilling shall be done in six inch layers and tamped down after each layer is put back as required to avoid settling in landscape areas and to 98% standard proctor in paved areas. Over-excavation shall be backfilled at the Contractor's expense. Contractor shall dispose of rocky trench material in area designated by the Sebastian County.
- D. If settling occurs within the warranted period, the Contractor shall be responsible for bring the trenches up to finish grade and repairing plant damage without additional compensation.

3.4 PIPE INSTALLATION:

- A. Never install PVC pipe when there is water in the trench. Never install PVC pipe when the temperature is 32 degrees Fahrenheit or below.
- B. Install the mainline at a depth of 18 inches and the lateral lines at a depth of 12 inches below finished grade. Maintain a 4 inch clearance between pipes that cross at an intersection and a 2 inch clearance between pipes that are cross at an intersection and a 2 inch clearance between pipes that are buried in the same trench.
- C. Remove all foreign matter or dirt from the inside of the pipe before joining. Cap or plug all lines after installation and prior to testing to minimize infiltration of matter or dirt.
- D. Snake pipe from side to side of trench bottom to allow for expansion and contraction. Install main lines and lateral lines in common trenches wherever possible.

3.5 PIPE AND FITTING CONNECTIONS:

- A. Meet ASTM D2855 Standard Practice for making solvent-cemented joints with PVC pipe and fittings. Use only the solvent approved and/or recommended by the pipe manufacturer to make solvent welded joints. Thoroughly clean pipe and fitting of dirt, dust and moisture before applying solvent.
- B. Allow all joints to set and cure for a minimum of 12 hours prior to pressurization of system.

3.6 WIRE INSTALLATION:

- A. Verify that the work of this section is installed in strict accordance with the latest edition of the National Electric Code and local electrical codes.
- B. Install neutral and control wires, 12 inches below finish grade, in the same trenches as the main and lateral lines. The wires shall be installed in a neat and orderly fashion and bundled together and taped every 10 feet. Snake wires in trench to allow for expansion and contraction and provide slack loops at every splice, change of direction, at the valves; where the wire enters the conduit for the automatic controller and at least every 100 feet in runs more than 100 feet in length. The slack loops shall be created by wrapping 3 feet or wire around a ½ inch diameter pipe to form a coil.
- C. Connect each solenoid to the controller with a “control wire” which is typically red in color. Connect a “common neutral wire” to all solenoids which is typically white in color.
- D. Solder or join all wire connections by positive mechanical connectors. Splices must be properly insulated and water proofed. Control wire splices will be allowed only in runs more than 500 feet and only in valve boxes.
- E. All wire passing under existing or future paving and construction shall be encased in Sch40 PVC sleeving, which will extend a minimum of 18 inches beyond the edges of paving or construction.

3.7 CONTROLLER & SENSOR INSTALLATION:

- A. Coordinate with Sebastian County the exact location where the automatic controller will be located. Connect all zone valve and sensor wiring in accordance with manufacturer’s instructions. Provide separate, secured to the wall, conduits for both power supply and control wiring. Provide electrical grounding for the controller in accordance with the manufacturer’s instructions
- B. Sebastian County is responsible for providing a J-box with 115VAC: 1Phase power to the controller location. Contractor shall hard wire to the J-box.
- C. Install the rain and freeze sensors in an open area where the device is exposed to rain water but not sprinkler water. Mount away from overhanging objects that may interfere with rainfall. Connect wiring in accordance with manufacturer’s instruction.

3.8 VALVE INSTALLATION:

- A. The remote control valves shall be installed in accordance with manufacturer’s instructions. Valves shall be installed in Armor valve boxes or approved equal. Boxes shall be installed to a height that will not cause them to interfere with maintenance machinery and which is sufficient to prevent soil or mulch from washing into the box. Provide a 6 inch layer of washed gravel in the bottom of the valve box. Valves shall be set a minimum of two feet behind curbs. Valves shall not be set in curves which are vulnerable to damage by truck trailers over running curbs.
- B. The automatic drain valves shall be installed in the low points of the lateral lines. Dig a minimum two (2) cubic foot hole where the drain valve is to be located. Install the drain valve in a PVC tee pointing downward at a 45 degree angle. Surround the drain valve with a minimum one (1) cubic foot of gravel. Place an 18”x18” piece of weed cloth or burlap on top of the gravel. Finish to grade with top soil.
- C. Install in the low points of the mainline, manual gate valves as needed for draining. Install 24” off of the mainline in 10” Round Valve Box.

3.9 FLUSHING & PRESSURE TESTING:

- A. Prior to backfilling and installation of sprinkler heads, open all control valves and use full line pressure to completely flush lines of foreign matter and dirt.
- B. With zone valves closed, pressure test mainlines by supplying and maintaining full static pressure continuously for one full hour. Observe for evidence of leakage by monitoring flow meter and by visual inspection of the exposed lines. Repair all leaks and retest until no water flow is observed.

3.10 SPRINKLER HEAD INSTALLATION:

- A. After finish grading is accomplished, install heads to finished grade in lawn areas and backfill with clean topsoil so head is stabilized and no lateral motion is exhibited during operation. Heads in the turf areas shall be set flush with the finished grade and not a hazard to pedestrians and/or maintenance machinery. Set sprinkler heads to plumb within 1/16" and a minimum of 4 inches and a maximum of 6 inches from walks, walls and curbs.
- B. Sprinkler heads to be spaced so as not to throw water on the buildings, walks or driveways. Heads shall be adjusted as required so that foliage of plants will not obstruct the spray and that the system has 100% coverage.
- C. Provide connection to the PVC lateral lines, for spray heads and small rotors, with barbed fittings and swing pipe. Do not use more than 18 inches of swing pipe for each sprinkler head.
- D. Provide connection to the PVC lateral lines, for quick couplers, with PVC Swing Joints.

3.11 OPERATION, TESTING AND BALANCING:

- A. Testing: Upon completion of the irrigation system, and after pressure testing and head installation, the entire system shall be tested for proper operation. All air shall be flushed from the system and all components checked for proper operation by the Contractor under the supervision of Sebastian County. The system shall be tested in strict accordance with all applicable codes, ordinances, and regulations.
- B. Any portions requiring repair shall be replaced or repaired and test repeated. No testing shall be done until the last solvent welded joint has had 12 hours to set and cure.
- C. Balancing and Adjustment: The Contractor shall balance and adjust the various components of the system so that the overall operations are most efficient. This work shall include adjustment to all sprinkler heads and individual station adjustments on the controllers. Observe that all zones function properly and in the correct sequence.

3.12 MAINTENANCE & COMPLETION OF WORK:

- A. The Contractor shall orient Sebastian County's personnel to the operation and adjustments of the controllers according to local seasonal requirements. The Contractor shall also familiarize Sebastian County with sprinkler and valve adjustments. Sebastian County is, in general to be totally familiarized with the overall operation, adjustment, maintenance and intent of the irrigation system, including the measures that should be taken to provide winterization for the system. Such instructions should be in written form. The contractor shall also provide a color coded laminated plan, in the controller doors, showing the locations of all zones for each controller.

3.13 INSPECTION & SATISFACTORY COMPLETION:

- A. When Contractor is satisfied that the entire system is operating properly, that it is balanced and adjusted so that all work and clean-up is completed, he shall submit request for initial inspection to Sebastian County at least one week prior to anticipated date of inspection and testing.
- B. Submit reproducible as-built Record Drawings and Maintenance Manual to Sebastian County with request for inspection
- C. Inspect the work jointly with Sebastian County for satisfactory completion.
- D. Upon completion of repairs and replacements found necessary at time of inspection, Sebastian County will confirm the date of substantial completion of the project.
- E. The date of satisfactory completion of the project will determine:
 - 1. The start date of maintenance period as part to this Section.
 - 2. The beginning date of the One-Year Guarantee Period.

3.14 GUARANTEE:

- A. Guarantee all work, products, equipment and material for one (1) year period beginning upon satisfactory completion of the project.
- B. Guarantee applies to all losses with the exception of those due to Acts of God, vandalism, and occupancy of the project or Sebastian County neglect, as determined by Sebastian County.

3.15 FINAL INSPECTION:

- A. At end of Guarantee Period and upon request for final inspection, jointly review all guaranteed work for final acceptance with Sebastian County.

- B. Submit written request for final inspection to Sebastian County at least two weeks prior to anticipated date of inspection.

3.16 FINAL ACCEPTANCE:

- A. Upon completion by the Contractor of all required repairs and replacements found at time of final inspection, Sebastian County will confirm the date of Final Acceptance of the work.
- B. Confirmation of Final Acceptance by Sebastian County will constitute completion of the work of this Section.